



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/331,763 06/25/99 NISHIDA

K 177/526327

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QM12/1025

EXAMINER

MEREK, J

ART UNIT

PAPER NUMBER

3727

DATE MAILED:

12  
10/25/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/331,763

Applicant(s)  
Nishida

Examiner  
Joe Merek

Art Unit  
3727



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Aug 14, 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 39-76 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39-76 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 U.S.C. § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 39-42, 45, 48, 54, and 58-76 are rejected under 35 U.S.C. 102(e) as being anticipated by Murakami. Regarding claim 39 and 41, see Col. 5, lines 46-51 where it is stated that the device is pressed under heating. These actions occur at the same time. The pressure is at least 20gf per bump. As the bumps are deformed as the leveling occurs. Regarding claim 40, the pressing is towards the circuit board. Regarding claims 42 and 45, the resin on the board is considered a sheet and is an adhesive. Regarding claim 48, see Fig. 2A, where the thickness of the resin sheet prior to aligning, is smaller than the width of the connection between the electrode and the electronic component. Regarding claim 54, the resin sheet is on a side of the circuit board. Regarding claims 58-76, in light of applicants arguments that the claim is directed to the apparatus and not the circuit board, component, or the adhesive sheet, the reference meets the claims.

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*Claim Rejections - 35 U.S.C. § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami in view of Tsukagoshi et al. Murakami does not teach the sheet being thicker than the gap.

Tsukagoshi et al, as seen in Figs. 8 and 9, teaches the sheet being thicker than the gap. It would have been obvious to employ the thicker sheet of Tsukagoshi et al in the method of Murakami to provide a stronger bond or more bonding material. See Fig. 8 of Tsukagoshi et al where the bonding material 16 is up the sides of the component.

5. Claims 44, 46, 47, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami in view of Tang et al. Regarding claim 44, Murakami does not teach the use of a sheet of anisotropic thermosetting resin. Tang et al teaches bonding a component to a circuit board using a sheet of anisotropic thermosetting resin. It would have been obvious to employ the resin of Tang et al in the method of Murakami for compensating in deviations in the planarity of the board as taught by Tang et al. Regarding claim 46, the particles of Tang et al are conductive. Regarding claim 47, Tang et al teaches a conductive coating of nickel and gold but does not teach it as the conductive coating for the particles. It would have been obvious to employ it for the particles to eliminate the need for another or different coating for the particles.

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6. Claims 49 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami in view of Tang et al as applied to claim 48 above, and further in view of Matsumoto et al '069. Regarding claim 48, the modified method of Murakami does not teach the conductive adhesive applied to the bumps. Matsumoto et al '069, teaches the use of conductive adhesive on the bumps. It would have been obvious to employ the conductive adhesive of Matsumoto et al '069 in the modified method of Murakami to provide a better or stronger bond. Regarding claim 53, the bumps are forced through the resin and the paste as part of the bumps are hardened prior to adhesion to the board.

7. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami. Regarding claim 50, Murakami does not teach the use of flux. Official notice is taken that it is well known to apply flux to metal joints. It would have been obvious to employ flux to the electrodes of Murakami to provide a better bond.

8. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami in view of Grupen-Shemansky et al. Murakami does not teach the sheet having holes corresponding to the electrodes and the holes filled with conductive particles. Grupen-Shemansky et al as seen in Figs. 1-3, teaches a sheet 12 of adhesive with holes filled with conductive particles. It would have been obvious to employ the sheet of Grupen-Shemansky et al in the method of Murakami to provide a stronger bond.

9. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami in view of Grupen-Shemansky et al as applied to claim 51 above, and further in view of Tsukagoshi et al

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'542 and Matsubara et al. Regarding claim 52, Murakami does not teach the use of large particles or the ultrasonic vibrations. Tsukagoshi et al '542, teaches the use of large particles. It would have been obvious to employ the particles of Tsukagoshi et al '542 in the method of Murakami to provide spacing. Matsubara et al teaches the use of ultrasonic vibrations in the bonding step. It would have been obvious to employ the vibrations of Matsubara et al in the method of Murakami to provide a better bond.

#### *Response to Arguments*

10. Applicant's arguments filed 8/14/01 have been fully considered but they are not persuasive. Murakami, as seen in Col. 3, line 23-25, aligns the electrodes. Murakami does not specify what achieves the aligning. It is inherent that the aligning is performed by hand or some other element which satisfies the broad device limitation. Murakami, as seen in Col. 5, lines 46-50, performs the pressing under heating. The heating sets the thermosetting resin. They are performed at the same time. This satisfies the approximately the same time limitation.

11. Applicant's arguments with respect to claims 51 and 52 have been considered but are moot in view of the new ground(s) of rejection.

#### *Conclusion*

12. It is to be noted that this is a non-final action due to the new grounds of rejection.

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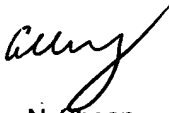
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Legg et al is cited for teaching a heated head.

14. In order to reduce pendency and avoid potential delays, Group 3720 is encouraging FAXing of responses in Office Actions directly into the Group at (703) 305-3579. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by Applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 3720 will be promptly forwarded to the examiner.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Merek whose telephone number is (703) 305-0644.

Joe Merek/jm

October 19, 2001



Allan N. Shoap  
Supervisory Patent Examiner  
Group 3700

**Attachment for PTO-948 (Rev. 03/01, or earlier)**  
**6/18/01**

**The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.**

**INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

**1. Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

**2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated in the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

**Timing of Corrections**

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.